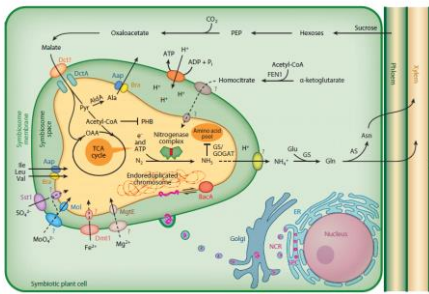
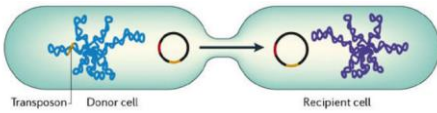


Advertise your Honours or Postgraduate Research Opportunities on the School website

Research opportunity:	Honours	X	Masters	PhD
Project title:	Symbiotic role of bacterial cargo genes encoded on mobile genetic elements			
Short project description & main objectives:	<p>Rhizobia are free-living bacteria capable of developing a N₂-fixing symbiosis with legumes. During symbiotic development, rhizobia infect the legume host and differentiate into an intracellular endosymbiont. This switch from free-living to endosymbiotic life-styles requires significant physiological change in rhizobia which is driven by expression of a range of symbiosis genes. In the <i>Mesorhizobium</i> genus these genes are encoded on mobile genetic elements referred to as symbiosis integrative and conjugative elements (ICEs). Although symbiosis ICEs appear to carry an array of genes essential to the establishment and maintenance of N₂-fixing symbioses, bioinformatics analysis of available full-genome sequences of these organisms has revealed that symbiosis ICEs also carry a wide array of uncharacterised genes. Moreover, symbiosis ICE transfer experiments in our laboratory demonstrate that the host chromosome also carries key determinants of symbiotic proficiency. In this project, you will investigate the potential role of uncharacterised ICE-encoded genes and those on the host chromosome using a combination of site-directed mutagenesis, mutant phenotyping, PCR and bioinformatic analysis.</p>			
 <p>Figure 1: Summary of metabolic exchange in mature N₂ fixing legume root nodule (Oldroyd et al., 2011)</p>  <p>Figure 2: Conjugal transfer of ICE from donor to recipient cell</p>				
Keywords:	Bacteria, microbiology, molecular biology, legumes			
Principal supervisor:	Dr Jason Terpolilli			
Other supervisors:	Dr Graham O'Hara			
Contact details for further information:	J.Terpolilli@murdoch.edu.au			
Closing date for applications:	Open-ended			
Start & finish date of project:	N/A			
Available part-time?	Yes			

If applicable:

Research centre/group:	Centre for Rhizobium Studies
Desired background of applicants:	Completion of BIO246 Microbiology I or equivalent; knowledge of molecular techniques and/or plant biology
Additional funding/scholarship provided:	Successful applicants will be eligible to apply for the ALOSCA Honours Scholarship.
Other benefits:	Centre for Rhizobium Studies
Extra Comments:	